



# UNITED STATES PATENT AND TRADEMARK OFFICE

*EST*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/770,888

02/03/2004

Paul Martin Schulte

NTS 0102 PUS

1089

22045

7590

08/14/2006

BROOKS KUSHMAN P.C.  
1000 TOWN CENTER  
TWENTY-SECOND FLOOR  
SOUTHFIELD, MI 48075

EXAMINER

TALBOT, MICHAEL

ART UNIT

PAPER NUMBER

3722

DATE MAILED: 08/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/770,888

Applicant(s)

SCHULTE, PAUL MARTIN

Examiner

Michael W. Talbot

Art Unit

3722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05 June 2006 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 32 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claim limitation of claim 32, specifically "wherein a ratio of the hole after cutting operation to the tolerances of the hole after the cutting operation is at least 250 to 1" is not supported by the original specification as claimed. Furthermore, it is unclear as to the specific criteria (or dimension) that are being used in the claimed ratio (i.e. is it the depth, length, diameter, etc.).

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 3722

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6,9,10,13,14,16-24 and 27-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Yeo '316. Yeo '316 shows in Figure 1 a rotary cutting tool (10 and col. 1, line 61 through col. 2, line 2) having a shank (12) for rotation in a first hand direction (15), a cylindrical body extending axially from shank having at least one first flute (28) with at least one first flute cutting edge (36) in a distal end (40) of the body, the body having at least one helical flute (16,18) formed therein at an angle relative to an axis of rotation that is greater than that of the at least one first flute (col. 2, lines 51-54 and col. 3, lines 10-13) and being formed in a second hand rotational direction opposite to the first hand directional rotation. Yeo '316 shows the at least one helical flute having at least one helical flute cutting edge (24,26) spaced radially apart from the at least one first flute cutting edge so that a leading portion of the cutting edges generally lie in a common radial plane. Yeo '316 shows the at least one first flute and first flute cutting edge being straight relative to the axis of rotation when the helix angle is approximately a 1 degree helix (col. 3, lines 10-13) and therefore equivalent to that defined by the Applicant in the specification (page 8, lines 15-24).

Regarding claim 4, Yeo '316 shows a longitudinal direction between the at least first flute cutting edge and the at least one helical flute cutting edge being less than 10 percent. Again based upon the relationship chosen between the helix angles of the first flute and helical cutting edges, a 10 percent or less relationship can be achieved (col. 3, lines 10-13).

Regarding claims 6,9 and 10, Yeo '316 shows a cylindrical margin (20,22,42), a longitudinal margin (42) generally aligned with the at least first flute, and a helical margin (20,22) generally aligned with the at least one helical flute for providing bearing support to the tool within the hole.

Regarding claims 13,17 and 18, Yeo '316 shows at least one primary relief surface (46) and at least one secondary relief surface (48) extending therefrom and formed along the at least one first flute cutting edge, and at least one relief surface (32,34) formed along the at least one helical flute cutting edge.

Regarding claims 14 and 16, Yeo '316 shows the at least one first flute cutting edge comprising a leading edge (50) inclined in relation to a radial plane and an end cutting edge (52) formed at an intersection of the first flute cutting edge and the distal end of the body (col. 3, lines 3-8).

Regarding claims 19-24, Yeo '316 shows the at least one first flute comprising an array of first flutes (28, only 1 of 2 shown) and the at least one helical flute comprising an array of helical flutes (16,18) wherein the respective array has an angular spacing tolerance (as defined by the Applicant on page 9, lines 2-8) between sequential flutes that is equal to or less than four radial quadrants divided by twice the number of respective flutes in the array in order to vary the loads imparted on the workpiece and tool. The number for both the first flutes and helical flutes is 2, therefore the angular spacing tolerance for each is equal to  $(360 / (2*2)) = 360 / 4 = 90$  degrees which should be equal to or less than half the angular distance between respective flutes (180 degrees), which results in  $(1/2) * 180 \text{ degrees} = 90 \text{ degrees}$ .

Regarding claims 1 and 28-32, Applicant is inferring additional structure from the phrases "to at least 0.001 inches" as recited in claims 1 and 28, "wherein the tolerances of the cutting operation are plus or minus 0.0005 inches" as recited in claim 30, "wherein the tolerances of the cutting operation are plus or minus 0.0003 inches" as recited in claim 31, and "wherein a ratio of the hole after cutting operation to the tolerances of the hole after the cutting operation is at least 250 to 1" as recited in claim 32 than is actually being claimed within the respective claims. These phrases do not provide any additional structure enabling the claimed

Art Unit: 3722

invention to overcome the referenced prior art, but merely provide finished specifications that are dependent upon, at a minimum, the operator, the method used by the operator to perform the operation, and the condition of the rotary tool during use. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to finish a hole to within a specified tolerance range for the purpose of meeting industry compliance standards, because it has been held to be within the general skill of a worker in the art to select a tolerance range on the basis of its suitability for the intended use as a matter of obvious design choice and without producing any new and unexpected results involves only routine skill in the art.

6. Claims 1-10,13 and 18-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Serwa 2002/0090273. Serwa 2002/0090273 shows in Figures 1-3 a rotary cutting tool (10 and page 1, paragraph [0002]) having a shank (18) for rotation in a first hand direction (A), a cylindrical body extending axially from shank having at least one first flute (24) with at least one first flute cutting edge (20) in a distal end (16) of the body, the body having at least one helical flute (26) formed therein at an angle relative to an axis of rotation that is greater than that of the at least one first flute (page 3, paragraph [0025]) and being formed in a second hand rotational direction opposite to the first hand directional rotation. Serwa 2002/0090273 shows the at least one helical flute having at least one helical flute cutting edge (22) spaced radially apart from the at least one first flute cutting edge so that a leading portion of the cutting edges generally lie in a common radial plane. Serwa 2002/0090273 shows the at least one first flute and first flute cutting edge being parallel or substantially parallel to the axis of rotation (page 3, paragraph [0025]) and therefore equivalent to that defined by the Applicant in the specification (page 8, lines 15-24).

Art Unit: 3722

Regarding claim 4, Serwa 2002/0090273 shows a longitudinal direction between the at least first flute cutting edge and the at least one helical flute cutting edge being less than 10 percent. Again based upon the relationship chosen between the helix angles of the first flute and helical cutting edges, a 10 percent or less relationship can be achieved (page 3, paragraph [0025]).

Regarding claims 6,9 and 10, Serwa 2002/0090273 shows in Figures 2 and 3 a cylindrical margin (not indexed), a longitudinal margin (not indexed) generally aligned with the at least first flute, and a helical margin (not indexed) generally aligned with the at least one helical flute for providing bearing support to the tool within the hole.

Regarding claims 7 and 8, Serwa 2002/0090273 shows in Figure 3 a negative rank angle for the first flute cutting edge (not indexed) and the helical flute cutting edge (not indexed).

Regarding claims 13 and 17, Serwa 2002/0090273 shows at least one primary relief surface (36) formed along the at least one first flute cutting edge, and at least one relief surface (34) formed along the at least one helical flute cutting edge.

Regarding claims 19-24, Serwa 2002/0090273 shows the at least one first flute comprising an array of first flutes (24,24) and the at least one helical flute comprising an array of helical flutes (26,26) wherein the respective array has an angular spacing tolerance (as defined by the Applicant on page 9, lines 2-8) between sequential flutes that is equal to or less than four radial quadrants divided by twice the number of respective flutes in the array in order to vary the loads imparted on the workpiece and tool. The number for both the first flutes and helical flutes is 2, therefore the angular spacing tolerance for each is equal to  $(360 / (2*2)) = 360 / 4 = 90$  degrees which should be equal to or less than half the angular distance between respective flutes (180 degrees), which results in  $(1/2) * 180 \text{ degrees} = 90 \text{ degrees}$ .

Art Unit: 3722

Regarding claims 25 and 26, Serwa 2002/0090273 shows the number of first flutes can be any number desired, such as 3 or 5 flutes (page 4, paragraph [0033]).

Regarding claims 1 and 28-32, Applicant is inferring additional structure from the phrases "to at least 0.001 inches" as recited in claims 1 and 28, "wherein the tolerances of the cutting operation are plus or minus 0.0005 inches" as recited in claim 30, "wherein the tolerances of the cutting operation are plus or minus 0.0003 inches" as recited in claim 31, and "wherein a ratio of the hole after cutting operation to the tolerances of the hole after the cutting operation is at least 250 to 1" as recited in claim 32 than is actually being claimed within the respective claims. These phrases do not provide any additional structure enabling the claimed invention to overcome the referenced prior art, but merely provide finished specifications that are dependent upon, at a minimum, the operator, the method used by the operator to perform the operation, and the condition of the rotary tool during use. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to finish a hole to within a specified tolerance range for the purpose of meeting industry compliance standards, because it has been held to be within the general skill of a worker in the art to select a tolerance range on the basis of its suitability for the intended use as a matter of obvious design choice and without producing any new and unexpected results involves only routine skill in the art.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



Art Unit: 3722

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo '316 in view of Reynolds et al. '458. Yeo '316 lacks the presence of at least one gash to assist in the removal of debris from the at least one helical flute cutting edge. Reynolds et al. '458 shows in Figures 1 and 2 a primary gash face (8) and a secondary gash face (10) serving the purpose of debris removal (col. 2, lines 32-44) from the helical flutes (5) at the body distal end (9). In view of this teaching of Reynolds et al. '458, it would have been obvious to include one or more gash faces shown by Reynolds et al. '458 to the rotary tool of Yeo '316 to facilitate debris removal so the tool could be operated at higher speeds with reduced wear, resulting in extended tool life.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo '316 in view of Magill et al. '712. Yeo '316 lacks the presence of a coolant channel for conveying coolant fluid to the cutting edges. Magill et al. '712 shows in Figure 5 a coolant passage (44) for conducting coolant to the cutting edges and the associated surface of the workpiece. In view of this teaching of Magill et al. '712, it would have been obvious to include a coolant passage shown by Magill et al. '712 to the rotary tool of Yeo '316 to provide cooling of the blades resulting in extended tool life.

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo '316 in view of Miller '487. Yeo '316 lacks the presence of a pilot tip extending from the distal end. Miller '487 shows in Figure 1 a pilot tip (21) extending from the body distal end (18). In view of this teaching of Miller '487, it would have been obvious to include a pilot tip shown by Miller '487 to provide bearing support to the rotary tool within the hole being formed.

#### ***Response to Arguments***

11. Applicant's arguments filed 05 June 2006 have been fully considered but they are not persuasive.

Art Unit: 3722

12. Specifically, Applicant is arguing the relationship between a rotary cutting tool and a reamer. Yeo '316 relates the particular described invention (a rotary cutting tool) to rotary cutting tools such as mills, drills and routers in col. 1, line 61 through col. 2, line 2 which all are capable of performing reamer-like functions, such as roughing and finishing holes free of burrs. Furthermore, a reamer is a specific type of drill.

Serwa 2002/0090273 relates the particular described invention (a router bit) to other equivalent rotary cutting tools such as roughing and finishing tools on page 1, paragraph [0002]. Furthermore, a reamer is a specific type of finishing tool.

13. Applicant is inferring additional structure from the proposed amendments to claims 1,28 and 29 and new claims 30-32. These amendments do not provide any additional structure enabling the claimed invention to overcome the referenced prior art, but merely provide finished specifications that are dependent upon, at a minimum, the operator, the method used by the operator to perform the operation, and the condition of the rotary tool during use. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to finish a hole to within a specified tolerance range for the purpose of meeting industry compliance standards, because it has been held to be within the general skill of a worker in the art to select a tolerance range on the basis of its suitability for the intended use as a matter of obvious design choice and without producing any new and unexpected results involves only routine skill in the art.

### ***Conclusion***

14. Any inquiry concerning the content of this communication from the examiner should be directed to Michael W. Talbot, whose telephone number is 571-272-4481. The examiner's office hours are typically 8:30am until 5:00pm, Monday through Friday. The examiner's supervisor, Mrs. Monica S. Carter, may be reached at 571-272-4475.

Art Unit: 3722

In order to reduce pendency and avoid potential delays, group 3720 is encouraging FAXing of responses to Office Actions directly into the Group at FAX number 571-273-8300. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers, which require a fee, by applicants who authorize charges to a USPTO deposit account. Please identify Examiner Michael W. Talbot of Art Unit 3722 at the top of your cover sheet.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MWT  
Examiner  
8 August 2006

  
MONICA CARTER  
SUPERVISORY PATENT EXAMINER